What is claimed is:

1. A friction stir welding method comprising:

abutting an end of a first plate against an end of a second plate;

wherein upon abutment, projections are disposed on both surfaces of said abutted portion, constituted either by said end of said first plate, said end of said second plate, or both said ends of said first and second plates; and

rotating and moving a rotary tool having two large-diameter portions provided to both ends of a small-diameter portion along said abutted portion with said projections on both surfaces sandwiched between said two large-diameter portions of said rotary tool.

2. A friction stir welding method according to claim 1, wherein:

said ends of said first and second plates are each provided with projections protruding to both surfaces of said plates; and

said first and second plates are abutted against each other.

3. A friction stir welding method according to claim 2, wherein:

a second projection is formed to the end surface of said first plate at the abutted portion, and a recessed portion for receiving said second projection is formed to the end surface

of said second plate; and

said second projection is inserted to said recessed portion when friction stir welding said inserted portion.

4. A friction stir welding method according to claim 1, wherein:

said end of said first plate protrudes to both surfaces of said first plate, and at the same time, includes projections each extending toward said second plate along said first plate, with a recessed portion existing between said projections formed to both surfaces of said first plate;

said end of said second plate is inserted to said recessed portion; and

friction stir welding is performed thereto.

5. A friction stir welding method according to claim 1, wherein:

upon abutment, projections are formed to both surfaces at said end being abutted of at least said first plate, with a recessed portion existing between said two projections;

said end of said second plate is inserted to said recessed portion; and

friction stir welding is performed to said inserted portion.

6. A friction stir welding method according to claim 1, wherein:

said abutting step creates a hollow state; and

air is blown from one end of the hollow space toward the other end after the friction stir welding process.

7. A friction stir welding method according to claim 1, wherein:

the friction stir welding is performed using a rotary tool having blades provided to the outer periphery of each of said two large-diameter portions, by which the weld flash created by the friction stir welding is removed.

8. A friction stir welding method comprising:

abutting two face plates of a first hollow shape member against two face plates of a second hollow shape member, respectively;

wherein upon abutment, projections are disposed on both surfaces of said abutted portions, constituted either by said ends of each face plate of said first hollow shape member, by said ends of each face plate of said second hollow shape member, or by both; and

rotating and moving a rotary tool having two large-diameter portions provided to both ends of a small-diameter portion along said abutted portion with said projections on both surfaces sandwiched between said two large-diameter portions of said rotary tool, with either one side or both sides of said hollow shape members being subject to welding.

9. A friction stir welding method according to claim 8, wherein:

upon abutment, projections are disposed on both surfaces of at least said first plate at said end being abutted, with a recessed portion existing between said two projections;

said end of said second plate is inserted to said recessed portion; and

friction stir welding is performed to said inserted portion.

10. A friction stir welding method comprising:

abutting a first face plate of a first hollow shape member against a first face plate of a second hollow shape member, respectively;

wherein upon abutment, projections are disposed on both surfaces of said abutted portion, constituted either by said end of the face plate of said first hollow shape member, by said end of the face plate of said second hollow shape member, or by both;

rotating and moving a rotary tool having two large-diameter portions provided to both ends of a small-diameter portion along said abutted portion with said projections on both surfaces sandwiched between said two large-diameter portions of said rotary tool;

superposing a connecting member on and abutting the same against a second face plate of said first hollow shape member

and a second face plate of said second hollow shape member;

wherein upon abutment, projections are disposed on both surfaces of the abutted portion, constituted either by said end of the second face plate of said first hollow shape member, by an end of said connecting member, or by both;

further upon abutment, projections are disposed on both surfaces of the abutted portion, constituted either by said end of the second face plate of said second hollow member, by an end of said connecting member, or by both; and

rotating and moving a rotary tool having two large-diameter portions provided to both ends of a small-diameter portion along said abutted portion with said projections on both surfaces sandwiched between said two large-diameter portions of said rotary tool, with either the abutted portion between said first hollow shape member and said connecting member, or both the abutted portion between said first hollow shape member and said connecting member and the abutted portion between said second hollow shape member and said connecting member being subject to welding.

11. A friction stir welding method according to claim 10, wherein

upon abutting said first face plates, projections are disposed on both surfaces of at least one first face plate at said end being abutted, with a recessed portion existing between said two projections;

said end of the other first face plate is inserted to said recessed portion; and

friction stir welding is performed to said inserted portion.

12. A friction stir welding method according to claim 10, wherein

upon abutting said connecting member with said first hollow member and said second hollow member, at least at one abutting region, projections are disposed on both surfaces of at least the end of said connecting member or the end of the face plate being abutted thereto, with a recessed portion existing between said two projections;

the member abutting against said recessed portion is inserted to said recessed portion; and

friction stir welding is performed to said inserted portion.

13. A friction stir welding method according to claim 10, wherein

upon abutting said connecting member with said first hollow member and said second hollow member, at one abutting region, projections are disposed on both sides of at least the end of said connecting member or the end of the face plate being abutted thereto, with a recessed portion existing between said two projections;

the member abutting against said recessed portion is inserted to said recessed portion;

the other abutting region is not inserted to a recessed portion;

friction stir welding is performed to said other abutting region; and

thereafter, friction stir welding is performed to said inserted portion.

14. A friction stir welding method comprising:

abutting a first face plate of a first hollow shape member against a first face plate of a second hollow shape member;

friction stir welding said abutted region from a second face plate side;

superposing a plurality of connecting members shorter than said first and second hollow shape members to a second face plate of said first hollow shape member and a second face plate of said second hollow shape member along said first and second hollow shape members; and

welding the first hollow shape member and the connecting member, and friction stir welding the second hollow shape member and said connecting member.

15. A friction stir welding method according to claim 14, wherein:

after superposing said connecting members on said first and second hollow shape members, welding the area near the superposed portion between said connecting members; and

friction stir welding the superposed portion thereafter.

16. A friction stir welding method comprising:

abutting the end of a first plate against the end of a second plate;

wherein upon abutment, a projection is disposed on one surface of said abutted portion, constituted either by the end of said first plate, by the end of said second plate, or by both, said projection including a second projection; and

detecting said second projection and guiding an inserted rotary tool to said abutted portion.

17. A panel structure characterized in that:

an abutted portion between two panels is friction-stir-welded;

projections are disposed on both surfaces of said plate at the friction-stir-welded portion;

the line connecting one surface of said plate and the apex of one of said projections is substantially orthogonal to the thickness direction of said plates; and

the line connecting the other surface of said plate and the apex of the other projection is either arced or slanted.

18. A panel structure characterized in that:

two face plates of a first hollow shape member are abutted against and friction-stir-welded to two face plates of a second

hollow shape member, respectively; and

projections are disposed on both surfaces of said face plates at each of said friction-stir-welded portions.

19. A panel structure characterized in that:

two face plates of a first hollow shape member are abutted against and friction-stir-welded to two face plates of a second hollow shape member, respectively;

at the portion where first face plates are friction-stir-welded, the welded surface positioned at the outer surface side of said hollow shape member is substantially flush with the face plate;

at the portion where said first face plates are friction-stir-welded, the surface positioned at the inner side of said hollow shape member is provided with a projection; and

at the portion where second face plates are friction-stir-welded, projections are provided to both surfaces of said face plate.

20. A panel structure according to claim 19, wherein

the line connecting the apex of each projection and each face plate is either arced or slanted.

21. A panel structure characterized in that:

the abutting portion between a first face plate of a first hollow shape member and a first face plate of a second hollow

shape member is friction-stir-welded;

a second face plate of said first hollow shape member and a second face plate of said second hollow shape member are friction-stir-welded via a connecting member;

said friction stir welding is performed to the abutted portions between said second face plates and said connecting member; and

projections are disposed on both surfaces of said face plates at the friction-stir-welded portions, respectively.

22. A panel structure characterized in that:

the abutted portion between a first face plate of a first hollow shape member and a first face plate of a second hollow shape member is friction-stir-welded;

a second face plate of said first hollow shape member and a second face plate of said second hollow shape member are friction-stir-welded via a connecting member;

said friction stir welding is performed to the abutted portions between said second face plates and said connecting member;

in the area where said first face plates are friction-stir-welded, the welded surface facing the outer side of said hollow shape members is substantially flush with said first face plates;

in the area where said first face plates are friction-stir-welded, the surface facing the inner side of said

hollow shape members is provided with a projection; and

in the area where said second face plates are friction-stir-welded, projections are formed to both surfaces of said second face plates.

23. A panel structure according to claim 22, wherein

the line connecting the apex of each projection and the surface plates, respectively, is either arced or slanted.

24. A member for friction stir welding, characterized in that:

projections are disposed on both surfaces at an end portion of a plate, said projections each protruding toward the thickness direction of said plate and further protruding beyond said end portion along the surface of said plate;

a recessed portion exists between said projections formed to both surfaces of said plate at the end portion of said plate;

the bottom surface of said recessed portion is substantially disposed near the center of width of at least one of said projections; and

friction stir welding is performed to said end portion.

25. A member for friction stir welding according to claim 24, wherein

the bottom surface of said recessed portion is substantially disposed near the center of width of the projections formed to

both surfaces of said plate.

26. A member for friction stir welding according to claim 24, wherein

the length of one projection protruding along the surface of said plate is longer than that of the other projection.

27. A member for friction stir welding, characterized in that:

a first projection is provided to one surface of a plate at one end thereof that protrudes toward the thickness direction of said plate;

a second projection is provided to the other surface of said plate at said end thereof that protrudes toward the thickness direction of said plate and extends beyond said end along said other surface of said plate; and

friction stir welding is performed to said end portion.

28. A member for friction stir welding according to claim 27, wherein:

the end surface at said one end of said plate is substantially orthogonal to said plate along the thickness direction of said plate.

29. A member for friction stir welding according to claim 27, wherein:

the distance between the end surface of said one end of the plate to the end of said first projection on the other end thereof is substantially equal to the distance from the end surface of said one end of the plate to the end of said second projection on the other end thereof; and

the end surface of said one end of the plate is substantially disposed at the center of width of said second projection.

30. A member for friction stir welding, characterized in that:

first projections protruding in the thickness direction of a plate are formed to both surfaces of a first end of a plate, respectively;

a second projection protruding in the thickness direction of said plate is formed to one surface at a second end of said plate, said second projection further protruding beyond the second end side of said plate along said one surface; and

friction stir welding is performed to said first and second ends of said plate.

31. A member for friction stir welding according to claim 30, wherein:

a recessed portion is provided to one end surface of said plate between the apex of each of said first projections formed to both surfaces of said plate; and

the bottom surface of said recessed portion is substantially

disposed at the center of width of said first projection.

32. A member for friction stir welding according to claim 30, wherein:

the end surface of said second end of said plate is substantially disposed at the center of width of said second projection.

33. A member for friction stir welding, characterized in that:

first projections protruding in the thickness direction of a plate are formed to both surfaces at a first end of a plate, respectively;

a second projection protruding in the thickness direction of said plate is formed to one surface at a second end of said plate; and

friction stir welding is performed to said first and second ends of said plate.

34. A member for friction stir welding, characterized in that:

projections protruding in the thickness direction of a plate are formed to both surfaces at an end of a plate;

the line connecting the apex of the projection formed to a first surface of said plate and said first surface is substantially orthogonal to said plate;

the line connecting the apex of the projection formed to a second surface of said plate and said second surface is either arced or slanted; and

friction stir welding is performed to said end portion.

35. A hollow shape member comprising:

two substantially parallel face plates;

a connecting plate for connecting said face plates;

wherein at least one face plate comprises projections disposed on both surfaces at one end of said plate that protrude toward the thickness direction of said face plate and further protrude beyond said end along the surface of said face plate;

a recessed portion is provided at the end surface of said plate between said two projections;

the bottom surface of said recessed portion is substantially disposed near the center of width of at least one of said projections; and

friction stir welding is performed to said end.

36. A hollow shape member according to claim 35, wherein:

the bottom surface of said recessed portion is substantially disposed near the center of width of both said projections.

37. A hollow shape member according to claim 35, wherein

the length of one projection protruding along the surface of said plate is longer than that of the other projection.

38. A hollow shape member comprising:

two substantially parallel face plates;

a connecting plate for connecting said face plates;

wherein at least one face plate comprises a first projection disposed on a first surface at one end of said face plate protruding in the thickness direction of said plate;

a second projection is disposed on the second surface at said end of said face plate protruding in the thickness direction of said plate and further protruding beyond said one end along the second surface; and

friction stir welding is performed to said end.

39. A hollow shape member according to claim 38, wherein:

said first projection is disposed on the outer surface side of said hollow shape member.

40. A hollow shape member according to claim 38, wherein:

the distance between the end surface of said one end of said face plate to the end of said first projection on the other end thereof is substantially equal to the distance between the end surface of said one end of the face plate to the end of said second projection on the other end thereof; and

the end surface of said one end of said face plate is substantially disposed at the center of width of said second projection.

41. A hollow shape member comprising:

two substantially parallel face plates;

a connecting plate for connecting said face plates;

wherein at least one face plate comprises at one end thereof a projection formed to a first surface that protrudes in the thickness direction of said plate and further protrudes beyond said end of said face plate along said first surface; and

friction stir welding is performed to said end.

42. A hollow shape member according to claim 41, wherein:

said projection is provided to the inner side of said hollow shape member.

43. A hollow shape member according to claim 41, wherein:

the end of said one face plate is substantially disposed at the center of width of said projection.

44. A hollow shape member comprising:

two substantially parallel face plates;

a connecting plate for connecting said face plates;

wherein both plates are provided with projections disposed on both surfaces of one end thereof, respectively, that protrude in the thickness direction of said face plate;

the line connecting the apex of the projection facing the outer side of one face plate and the outer surface of said one

face plate is substantially orthogonal to said plate;

the line connecting the apex of the other projections and the other surfaces is either arced or slanted; and

friction stir welding is performed to said end.

45. A member for friction stir welding, comprising:

a first projection formed to an end of a plate that protrudes in the thickness direction of said plate; and

a second projection formed within the range of said first projection that protrudes in said thickness direction.

46. A member for friction stir welding, comprising a first member and a second member;

wherein an end of said first member is capable of being abutted against an end of said second member; and

upon abutment, either said end of said first plate, said end of said second plate, or both said ends of said first and second plates constitute projections disposed on both surfaces of the abutted region.

47. A hollow shape member comprising a first hollow shape member and a second hollow shape member;

wherein an end of each face plate of said first hollow shape member is capable of being abutted against an end of each face plate of said second hollow shape member; and

upon abutment, either said ends of the face plates of said

first hollow shape member, said ends of the face plates of said second hollow shape member, or both said ends of face plates of said first and second hollow shape members constitute projections disposed on both surfaces of the abutted region.

48. A hollow shape member comprising a first hollow shape member, a second hollow shape member, and a connecting member;

wherein an end of a first face plate of said first hollow shape member is capable of being abutted against an end of a first face plate of said second hollow shape member;

a second face plate of said first hollow shape member is capable of being abutted against one end of said connecting member, and a second face plate of said second hollow shape member is capable of being abutted against the other end of said connecting member; and

upon abutting said members, respectively, either one member, the other member, or both members constituting the abutted region forms projections disposed on both surfaces of the abutted region.